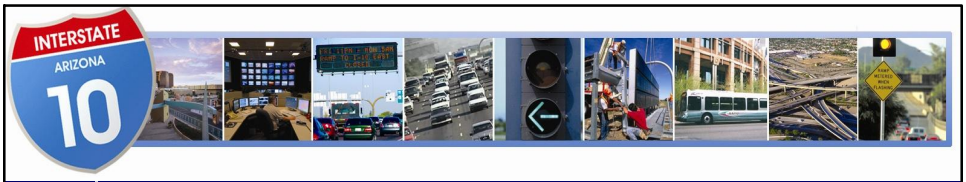

DTA Application in ITS Operations Planning

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MARICOPA ASSOCIATION of GOVERNMENTS

ITS Operations Planning

- Develop new regional ITS initiatives that impact traffic management and operations
- Evaluate the effectiveness of ITS strategies
- Examine new state and regional policies that may impact transportation operations – HOT lanes, lane control

Our First DTA Application I-10 ICMS Project

- Integrated Corridor Management System
- Why is this a particular challenge?
  - Arizona DOT operates all urban freeways
  - Arterials are owned and operated by local agencies
- Integrated operations on Freeway-Arterial corridors is a goal identified in our Regional Concept of Transportation Operations (RCTO)

What is an Integrated Corridor?

- Coordinated operations between transportation facilities and modes
  - freeways, arterials & transit operations
- Efficient and timely sharing of information among key operators
- Effective dissemination of corridor traveler information to the public
- Efficient incident and emergency management

I-10 Corridor – West Valley

- Major Widening started in 2009, and will continue for several more years

Strategies and scenarios that need to be modeled

- Alternate route guidance information
- Fwy & Arterial work zone traffic control
- Incident management strategies
- Corridor signal timing plans
- Ramp metering
- Bus Rapid Transit service

What is the most appropriate simulation model?

- Can traditional simulation tools accomplish what we want?
- Many in the industry have used Macroscopic and Microscopic models in the past, but our assessment is that these did not quite meet the needs for operations planning at the corridor scale

Macro Model Shortcomings From an Ops. Planning Viewpoint

- Do we know how the congestion or queue is built up over time?
- Do we know the bottlenecks and their impact area from the model?
- Is congestion always the result of capacity limitation? Non-recurring congestion
- Does the static assignment reflect the reality how vehicles are entering and exiting the network?

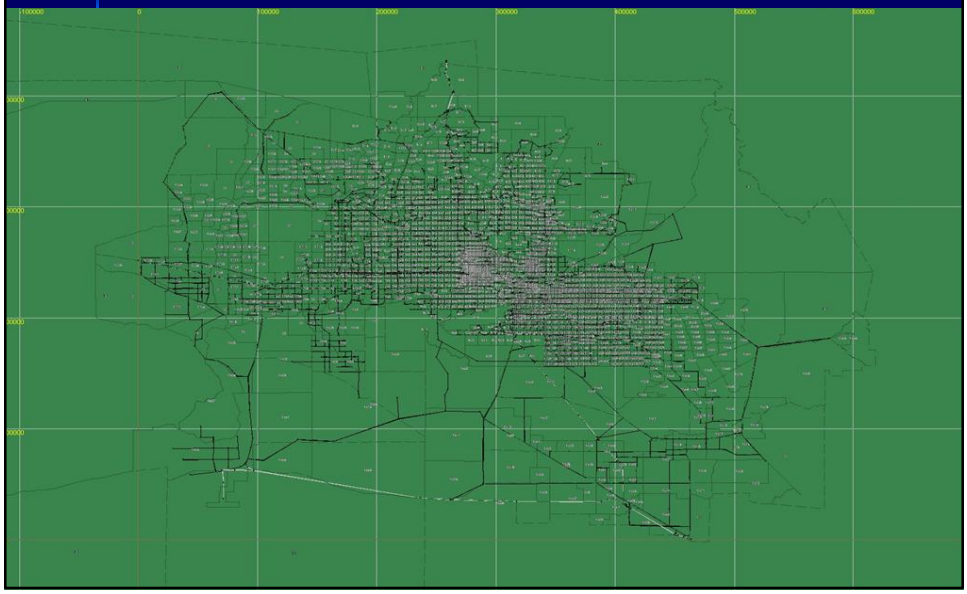
Microscopic Models

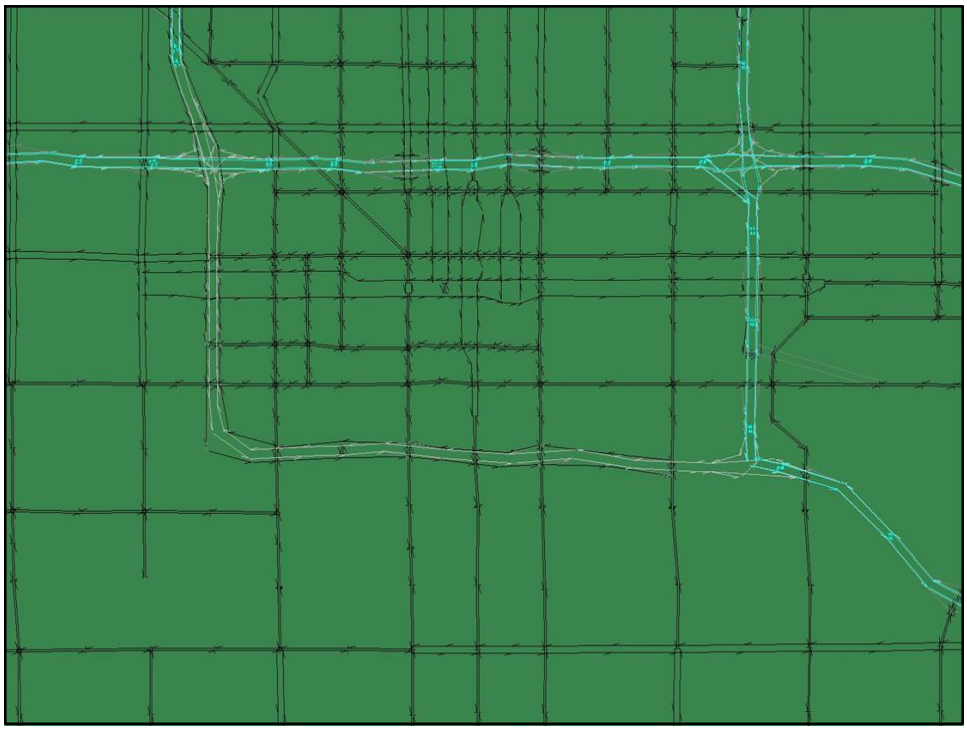
- Weak link to the Travel Demand Model - cannot incorporate O-Ds
- While these models may be applicable for some analysis of smaller areas, they are not adequate for regional operations planning
- Inability to incorporate ITS features

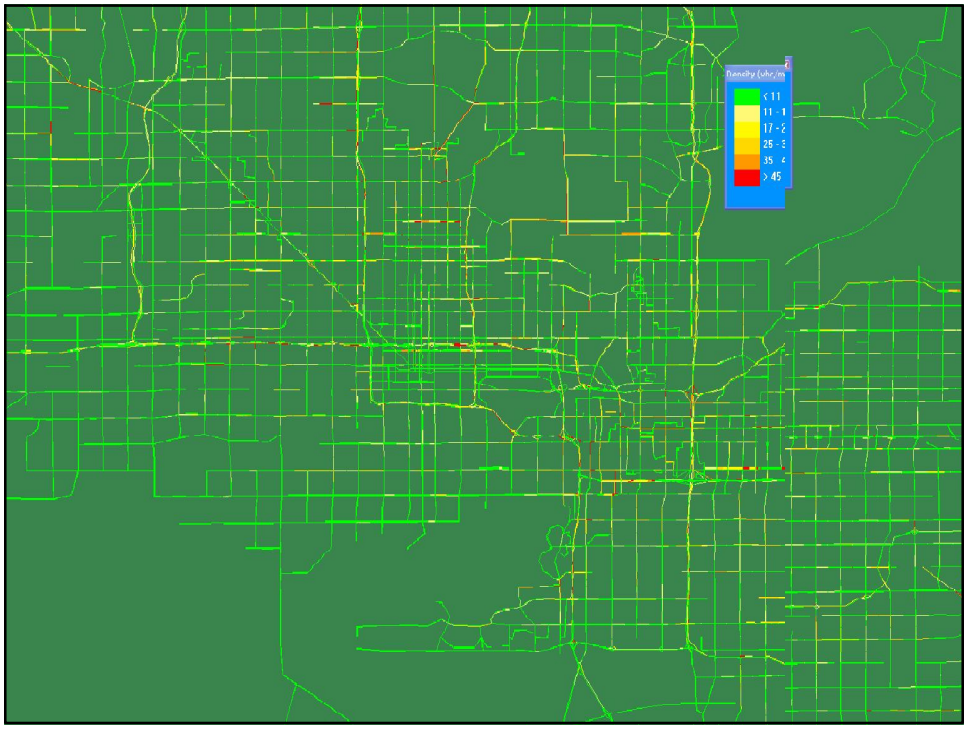
Why Mesoscale with DTA?

- Bridging the gap
  - Translate ODs into realistic flow volumes
  - Traffic Flow Model
- Results
  - Simulation of a large network
  - Operational Planning
  - Streamline transportation modeling process

Screenshots of the Mesoscopic Model's Network







Staff Requirements

- A transportation engineer who has a good grasp of travel demand model and ITS
- At least a Masters Degree
- Training -- to start off our effort we held a 3-day hands-on training workshop
- A very worthwhile long-term investment in staff for an MPO

Computer Requirements

- Computing requirements
  - 24GB of RAM
  - XEON Duo Processor
  - 64 bit OS
  - 1.5 TB
  - $ 10,000
- We are waiting for the arrival of this workstation

Next Steps

- Data Collection
  - Link volumes
  - Speeds on freeway, arterials
  - Movement restrictions
  - Signal Timing and Ramp Metering
- Model Calibration
- I-10 Corridor Subarea
- I-10 Construction scenarios setup
- ICM Strategies Evaluation

Thank You!

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